WHAT IS CLAIMED IS:

1. A molded glass substrate for a magnetic disk comprising:

upper and lower principal surfaces formed by molding between precision planar processing members;

an outer surface joining the upper and lower principal surfaces, wherein the outer surface is a molding-free face; and

an inner surface joining the upper and lower principal surfaces, the inner surface defining a through-hole in a central portion of the substrate.

2. The molded glass substrate according to claim 1, wherein each of the principal surfaces has an average surface roughness Ra of no greater than 0.5 nm.

3. The molded glass substrate according to claim 1, wherein each of the principal surfaces has a maximum height Ry of no greater than 5.0 nm.

4. The molded glass substrate according to claim 1, wherein each of the principal surfaces has a small waviness Wa of no greater than 0.5 nm.

5. The molded glass substrate according to claim 1, wherein each of the principal surfaces has accuracy of no greater than 3 μm in flatness.

6. The molded glass substrate according to claim 1, wherein the inner surface is ground and polished.

7. The molded glass substrate according to claim 1, wherein the inner surface is fire-polished.

8. The molded glass substrate according to claim 1, having a thickness of 0.3 mm to 1.0 mm and a diameter of 25.4 mm to 88.9 mm.

9. A method for manufacturing a glass substrate for a magnetic disk comprising:

press-molding a heated glass material in an inside space of a molding die comprising a pair of dies, each having a predetermined processing plane, and a barrel die for slidably guiding the dies while

forming an outer circumference of the glass material joined to both principal surfaces corresponding to the dies as a molding-free face;

cooling the press-molded glass substrate; and

forming a predetermined through-hole in a central portion of the glass substrate.

10. The method according to claim 9, wherein the press-molding of a glass material comprises:

supplying a glass material to the inside space of the molding die;

preheating and heating the glass material by heating the entire molding die;

press-molding the glass material into a glass substrate in a temperature range that allows the glass material to be molded by pressure; and

retrieving the glass substrate from the molding die after cooling.

11. The method according to claim 10, wherein a batch system is employed to perform heating and cooling of the entire molding die with one heating/cooling device.

12. The method according to claim 10, wherein a continuous system is employed to divide heating and cooling of the entire molding die into steps of preheating, transforming, and cooling and to control temperature and pressure in each step with a heating body and a pressurizing mechanism that are controlled at least one steady temperature.

13. The method according to claim 10, wherein a holder for holding an outer surface of the glass substrate and not in contact with the principal surfaces is used in forming the predetermined through-hole in the central portion of the glass substrate.

14. The method according to claim 13, wherein the holder holds the outer surface of the glass substrate, and boring, chamfering, and mirror-finishing of an end face of a bore are performed successively without changing a position at which the glass substrate is held.

15. The method according to claim 14, wherein a tool used for the boring,

chamfering, and mirror-finishing of the end face of a bore is a diamond mounted wheel comprising a core-drill portion and a chamfer portion that are separated from each other and formed as an integral component.

16. The method according to claim 15, wherein the diamond mounted wheel has a plurality of chamfer portions that differ in particle size.

17. The method according to claim 14, wherein the boring, chamfering, and mirror-finishing of the end face of a bore are each performed by applying a coolant for cooling a grinding wheel and the glass substrate.

18. The method according to claim 14, wherein the boring, chamfering, and mirror-finishing of the end face of a bore are performed by a device including a workpiece-rotating shaft that rotates while holding the outer circumference of the glass substrate, a grinding wheel spindle that is located in parallel with the workpiece-rotating shaft, and a sliding portion that allows one of the workpiece-rotating shaft and the grinding wheel spindle to move in an axial direction and in a direction perpendicular to the axial direction.

19. The method according to claim 10, wherein preheating, heating, and cooling are performed in a chamber filled with an inert gas.

20. The method according to claim 9, wherein unusual projections are removed by polishing the glass substrate after press-molding with ceric oxide dispersing liquid.